

*Nebulae discovered at the Chamberlin Observatory, University Park, Colorado. By Herbert A. Howe.**(Communicated by the Secretaries.)*

The following nebulae have been incidentally noted during the past few months, while making measures of catalogued nebulae with the 20-inch refractor. The positions given depend upon micrometric measures, and are for 1900.0. In the "Descriptions" and "Notes" numbers enclosed in brackets refer to Dreyer's Index Catalogue; other numbers are those of the N.G.C. :—

No.	Date. 1898.	R.A. h m s	Dec. ° ' "	Descriptions.
1	Dec. 16	0 50 50	-10 31'6	vF, S, near 309.
2	Jan. 6 1899.	2 29 16	-11 28'7	eS, vF, R, prob. nebs. *. Near 977 and 981.
3	Mar. 14	9 22 9	-11 40'5	F, vS, 10 ^m * p 7 ^s , 0'8 n.
4	Apr. 10	10 31 20	-12 12'3	eF, eS, possibly a *.
5	May 11	12 43 46	-13 51'1	vF, vmE 210°, 2' long.
6	May 10	12 45 2	-13 50'1	eF, vS.
7	May 10	12 45 9	-13 46'6	eF, vS.
8	May 10	12 45 16	-13 52'9	eF, vS.
9	May 10	12 45 23	-13 56'9 ±	eeF, vS, possibly a 14 ^m *.
10	May 11	12 46 4	-14 1'8	F, vS, R.
11	May 10	14 14 12	-4 1'6	vF, S, mE 200°. Near (997).
12	Sept. 7 1898.	18 36 40	+39 56'1	eS, eF. Near 6685 and 6686.
13	Sept. 17	21 34 6	-22 51'4	vS, eF. Near 7103 and 7104.
14	Oct. 11	23 34 19	-22 58'0	vF, vS, R, 6'5 n of Swift 234.
15	Nov. 16	23 41 10	-28 33'6	vF, vmE 200°, 20'' long.

Notes.

No. 1 precedes 309 51^s, 1'5 south.

No. 3 follows 2881 about a minute (of time).

No. 4 is near 3295 and 3296, which precede the places given by Leavenworth by 2^m 40^s. Leavenworth gave the same right ascension for 3295, 3296, and 3297. On 1899 April 10 I measured the places of 3295 and 3296. I could only suspect 3297. The object which I have supposed to be new follows the others 3^m 30^s.

Nos. 5-10, together with No. 15 of my former list, published in *Monthly Notices*, vol. lviii. No. 9, are in the vicinity of 4724 and 4727. I believe 4726 and 4740 to be identical at 12^h 46^m 18^s, -13° 40'6.

No. 11 precedes (997) about 30^s. (998), which its discoverer pronounces "eeF, v diffic.," I did not see. In its position, or very near it, is a double star of mags. 13.5-13.5, distance 30'', and angle 160°.

No. 12 precedes 6685 less than 2^s, 2'7 north. Between them lies a star of mag. 11.5.

No. 13 is in the same field with 7103, 7104 (1393), and No. 17 of my list in *Monthly Notices*, vol. lviii. No. 9. These five objects have all been seen in one night. Between my two novæ and 7103 one or two may exist, having

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been suspected on more than one night. A large telescope may well deal with this group.

No. 15 has puzzled me somewhat. The southern end is the brightest portion, and at times it seems as if the object were really a very faint double star, one or both components of which are nebulous.

*Observations of Nebulae made at the Chamberlin Observatory,
University Park, Colorado. By Herbert A. Howe.*

(Communicated by the Secretaries.)

The following notes on nebulae form a continuation of those given on pp. 515-24 of the Supplementary Number of the *Monthly Notices* for 1898. They were made during the twelve months beginning 1898 July 1 and ending 1899 June 30. During this period illness and occupation with other observations, especially upon *Eros*, have notably interfered with the regular observations of nebulae.

The numbers given below are the current ones of the N.G.C., except those which are enclosed in brackets, which refer to the Index Catalogue in vol. li. of the *Memoirs of the R.A.S.* When the name Swift is given, followed by a number, reference is made to the list published in *A.N.* 3517. In this list Swift has collected all previous discoveries of nebulae at the Lowe Observatory, and has numbered them consecutively. Positions of a few Marth nebulae are given below, because those in the N.G.C. are only approximate, though they are not far astray. Data about position angles and distances found in the following notes are, in the main, not derived from measures, but from eye-estimates. I have frequently made special notes about condensations in faint nebulae, where it has seemed that the condensations were sufficiently bright and well defined to be suitable for measures of parallax with a large telescope. All positions are referred to the mean equinox of 1900.0. The eyepiece used on the new Bruce micrometer magnifies 200 diameters, and gives a field 15' in diameter.

As previously, all observations were made with the 20-inch Clark-Saegmuller equatorial refractor.

Swift 1. The position is $0^{\text{h}} 1^{\text{m}} 22^{\text{s}}$, $-4^{\circ} 16'.4$.

135. The position is $0^{\text{h}} 26^{\text{m}} 43^{\text{s}}$, $-13^{\circ} 53'.3$.

178. The position is $0^{\text{h}} 34^{\text{m}} 7^{\text{s}}$, $-14^{\circ} 43'.2$.

209. This may almost be called a nebulous star. Its position is $0^{\text{h}} 34^{\text{m}} 4^{\text{s}}$, $-19^{\circ} 9'.4$.

232. The position is $0^{\text{h}} 37^{\text{m}} 48^{\text{s}}$, $-24^{\circ} 6'.5$.

235. The position is $0^{\text{h}} 37^{\text{m}} 56^{\text{s}}$, $-24^{\circ} 5'.4$.

303. This is elongated at 160° . Its position is $0^{\text{h}} 49^{\text{m}} 56^{\text{s}}$, $-17^{\circ} 11'.8$.

309. The position is $0^{\text{h}} 51^{\text{m}} 41^{\text{s}}$, $-10^{\circ} 27'.2$.

333. The position is $0^{\text{h}} 53^{\text{m}} 54^{\text{s}}$, $-17^{\circ} 0'.5$.

Swift 24. This looks resolvable, and is equivalent in bright-